

CzechGeo/EPOS **national node of ESFRI Landmark** **EPOS ERIC**

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EVROPSKÁ UNIE
Evropské strukturální a investiční fondy
Operační program Výzkum, vývoj a vzdělávání



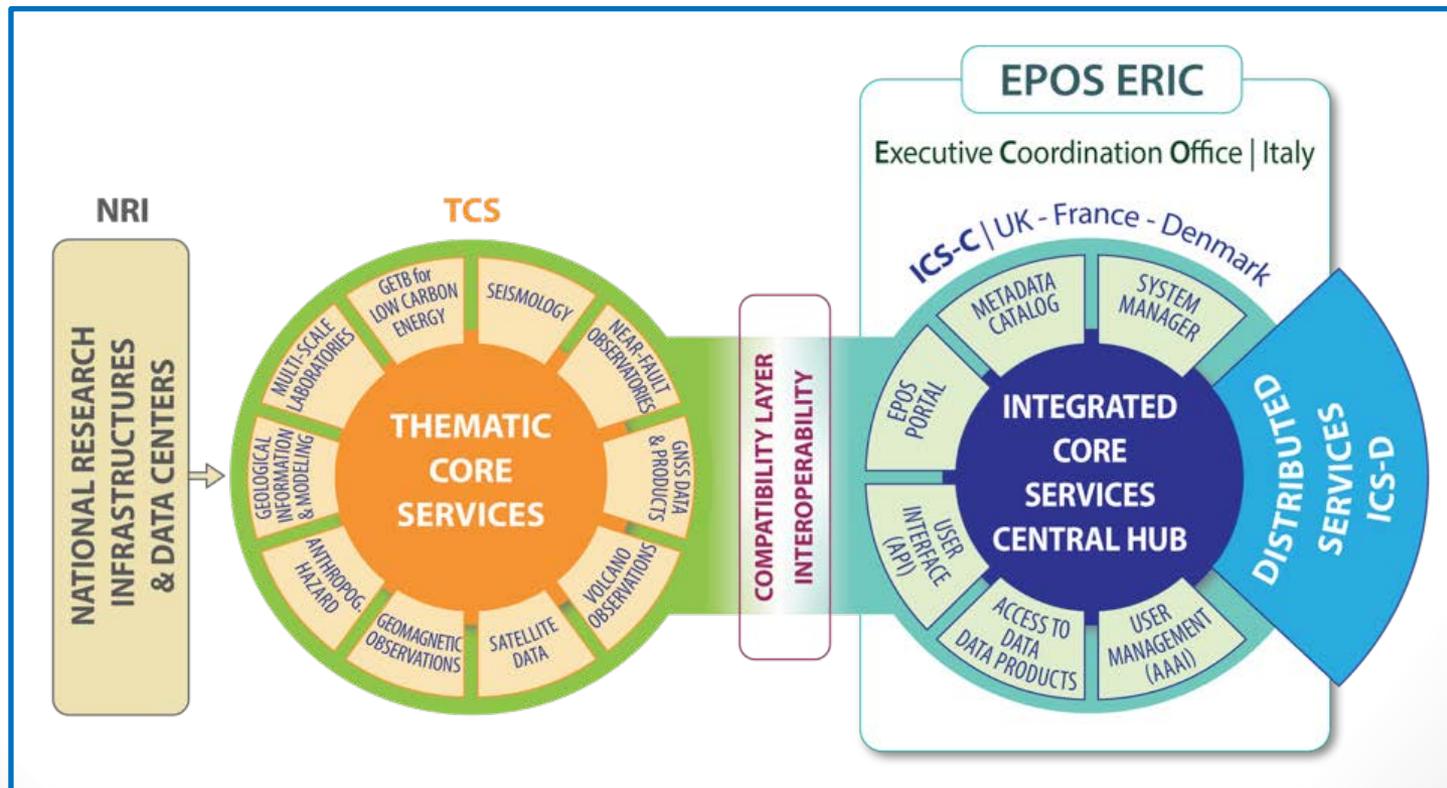
Large Research Infrastructures – Europe

- In 2002 **ESFRI** (European Strategy Forum on Research Infrastructures) was established bringing together the EU Member States and defining the **priorities for developing excellent research infrastructures of pan-European character and impact.**
- **EPOS (European Plate Observing System)** was included into the ESFRI Roadmap in 2008.
- EPOS mission is to integrate the diverse and advanced European Research Infrastructures for solid Earth science, and build on new e-science opportunities to provide users with advanced services (visualization tools, advanced analysis, etc.)
- In 2009 the Institute of Geophysics was invited to join the initiative towards “preparation” of **Preparatory Phase of the European Plate Observing System.**

European Plate Observing System – EPOS

EPOS Preparatory Phase Project (2010 – 2014) – one partner per country

EPOS Implementation Phase Project (2015 – 2019) – 47 partners, 6 associate partners, 25 countries involved.

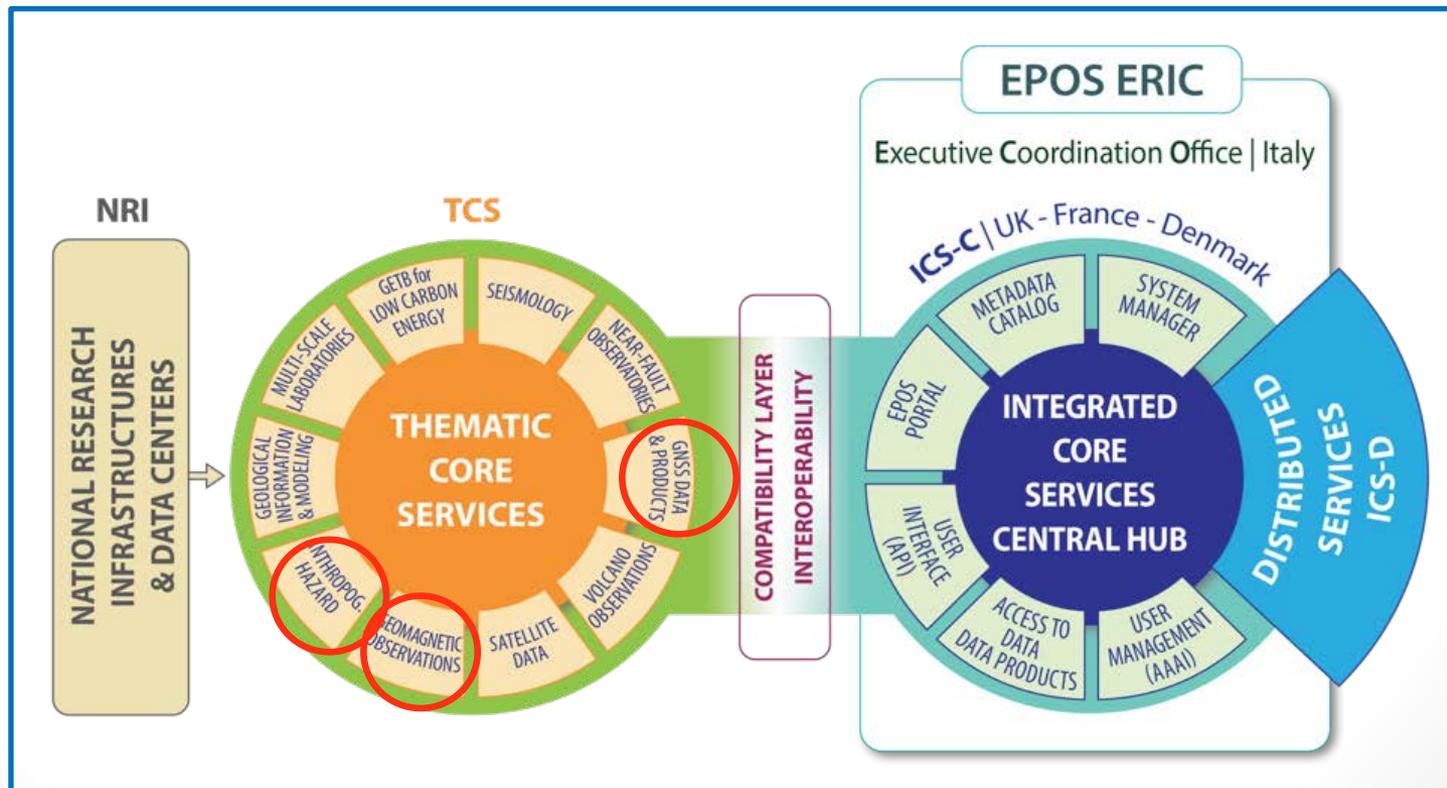


Participation of CzechGeo/EPOS Partners

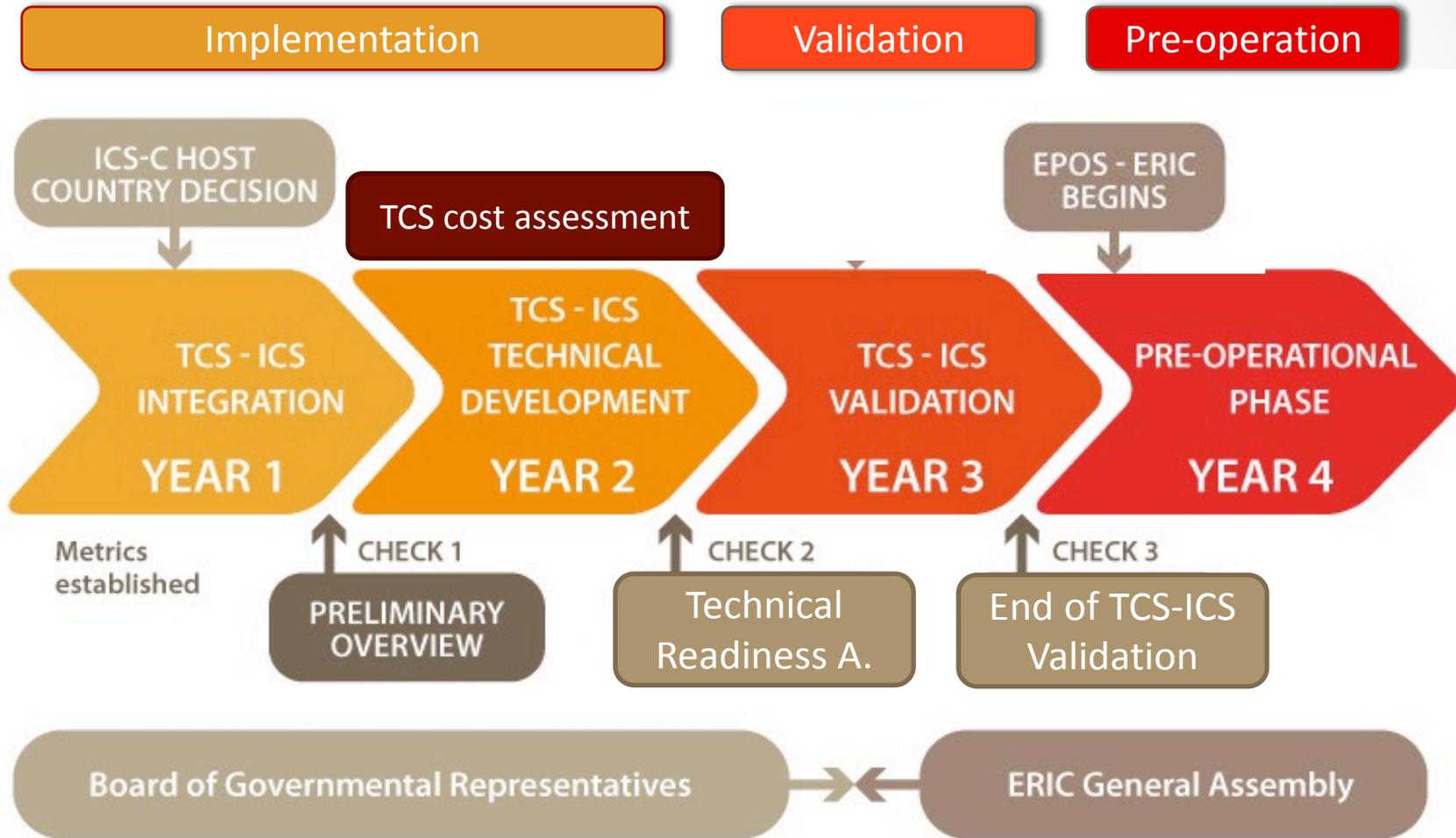
GNSS Data and Products – RIGTC – see poster Douša et al.

Geomagnetic Observations - IG ASCR

Anthropogenic Hazard – IG ASCR



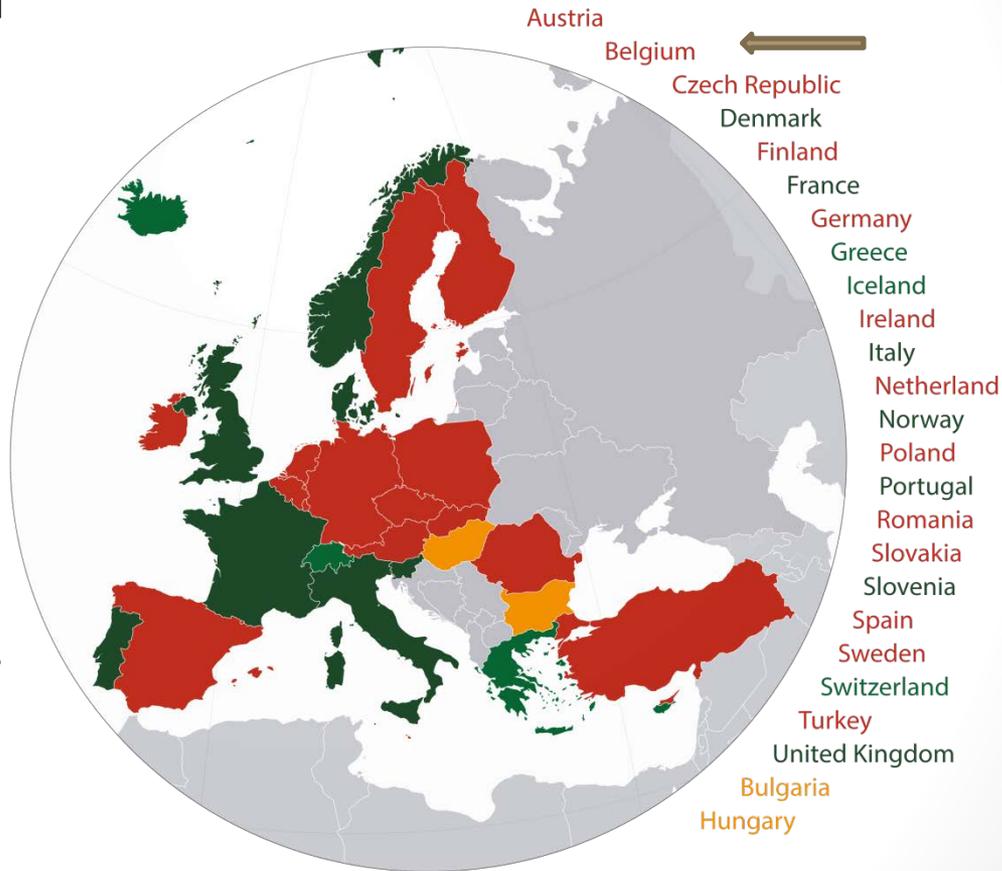
EPOS Implementation Phase



EPOS ERIC Partnership (October 2018)

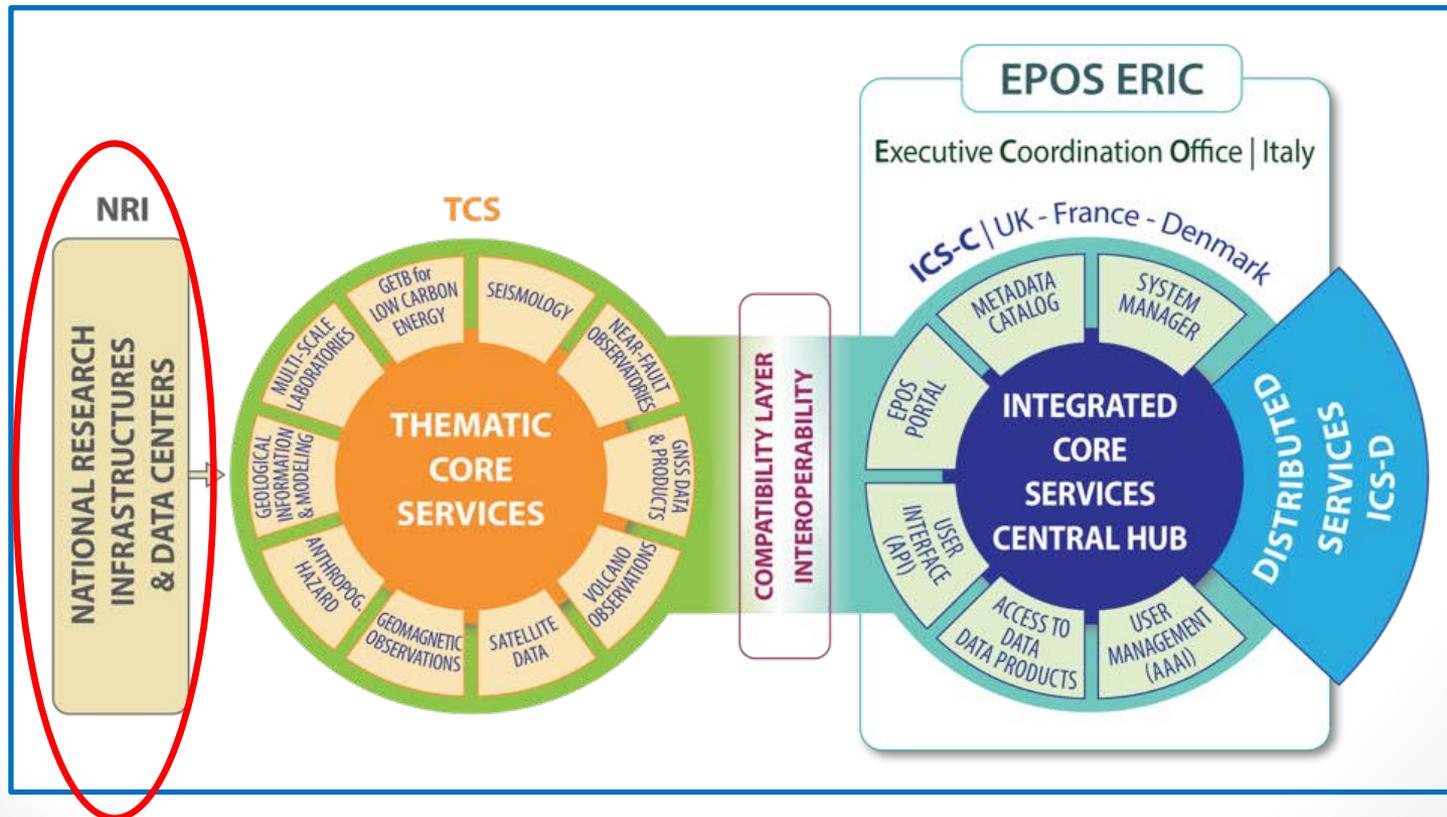
The EPOS-Eric was granted by the EC on October 30, 2018. The first meeting of General Assembly was held on November 7.

The Czech Governmental representative (MEYS) never visited the meetings of the Board of Governmental Representatives and never made known if the Czech Republic is going to join the EPOS ERIC.



National Research Infrastructures

- The basis of EPOS – observations of all countries are asked to contribute
- The institutions operating observatories will sign a supplier letter.



CzechGeo/EPOS 2010 – 2015

- Czech geoscience institutions responded in 2009 to the Call for Proposal and started integration of the scattered stations and networks into **CzechGeo/EPOS – Distributed System of Permanent Observatory Measurements and Temporary Monitoring of Geophysical Fields in the Czech Republic – Development and Operation of the National Node of the Pan-European EPOS Project.**
- Participating institutions
 - Institute of Geophysics of the CAS (IG CAS) – Hosting Institution
 - Masaryk University, Faculty of Sciences, Institute of Physics of the Earth (IPE MU)
 - Charles University in Prague
 - Faculty of the Mathematics and Physics, Department of Geophysics (FMP CU)
 - Faculty of Science, Institute of Hydrogeology, Engineering Geology and Applied Geophysics(FS CU)
 - Institute of Geonics of the CAS, Ostrava (IGN CAS)
 - Institute of Rock Structure and Mechanics of the CAS, Praha (IRSM CAS)
 - Research Institute of Geodesy, Topography and Cartography, Zdiby (RIGTC)

CzechGeo/EPOS 2016 – 2019

CzechGeo/EPOS – Distributed System of Permanent Observatory Measurements and Temporary Monitoring of Geophysical Fields

- Czech Geological Survey was invited to join the RI team (in accordance with the EPOS strategy)

The Infrastructure (about 20 networks and data centers) was divided into five Sections:

1. Section of Seismology (IG CAS)
2. Section of GNSS and Gravimetry (RIGTC)
3. Section of Crust Geodynamics (IRSM CAS)
4. Section of Geomagnetism (IG CAS)
5. Section of Geological and Geophysical Databases (CGS)

CzechGeo/EPOS 2016 – 2019

1. Section of Seismology

- 6 networks, over 70 stations
- pool of 63 mobile stations
- Near Fault Observatory planned in West Bohemia
- Seismological Software Centre

2. Section of GNSS and Gravimetry

- 3 permanent networks, 50 stations
- epoch-style observations on 60 sites
- Gravimetric Observatory
- GOP Data, Analytic and Software Centre

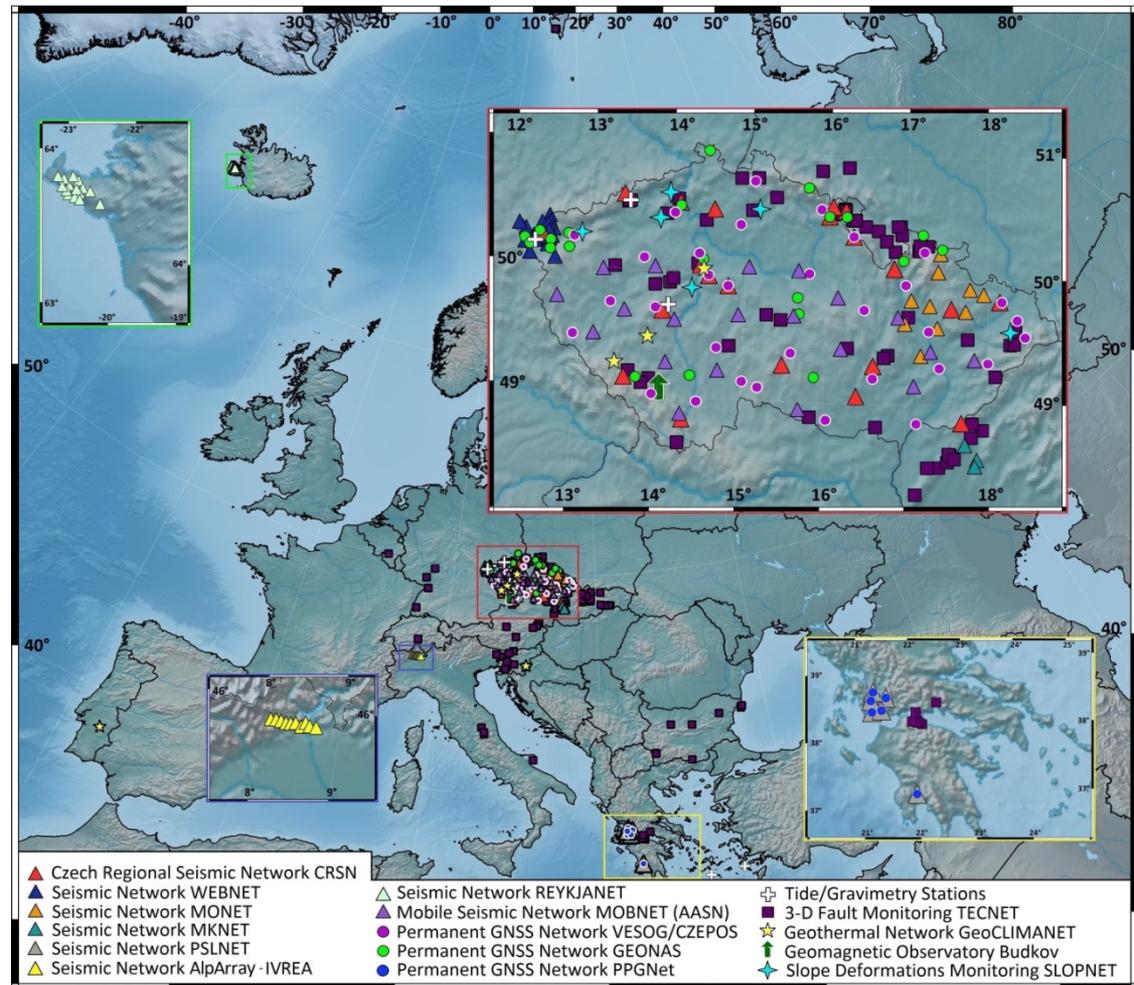
3. Section of Crust Geodynamics

- monitoring of fault displacement (160 sites), slope deformation (10 sites), temperature profile in boreholes (5 sites)
- tide observatories

4. Section of Geomagnetism

- Geomagnetic Observatory
- geomagnetic and magnetotelluric mobile sets

5. Section of geological and geophysical databases



Activities of all sections and or results based on their data will be presented in the next talks.

Projects to support the infrastructure

2010 – 2015, LM2010008, CzechGeo/EPOS, MEYS (state budget)

- investments and non-investments to support RDI and operation of the infrastructure
- no support of geoscience research activities

2016 – 2019, LM2015079, CzechGeo/EPOS, MEYS (state budget)

- non-investments to support RDI and operation of the infrastructure
- no support of geoscience research activities

2017 – 2020, CZ.02.1.01/0.0/0.0/16_013/0001800, CzechGeo/EPOS-Sci, OP Research, Development and Education

1. Project management
2. Modernization of observatory infrastructure - investments
3. Performance of geoscience research programs

CzechGeo/EPOS–Sci

- Research programs
 1. Investigation of intraplate seismicity on the territory of the Czech Republic and in close surroundings (SEIS)
 2. Structure of continental lithosphere and mapping LAB boundary in a broader surroundings of the Alps (DeepAlps)
 3. Development of infrastructure in the field of GNSS, gravimetry and Earth tides (GNSSgrav)
 4. Geodynamics
 5. Geological and Geophysical Data Infrastructure to Support Research

Service to the user community

Access to data

Open: CRSN, GEOMAG, Seismological Software Centre (registration), CARBONET, VESOG GNSS (not all stations), GOP data, Gravimetric station Pecný, CGS-DRI-partly

Open on request: PSLNET, PPGNet, WEBNET (location of seismic events and life seismograms available on-line), MONET, NFOWEB, CZET Skalná, GeoCLIMANET, TECNET, MKNET, SLOPENET, CGS-DRI-partly

Embargoed for a limited time: REYKJANET, MOBNET, CZET Jezeří (funded by a commercial partner), CZEPOS, CGS-DRI-partly.

Data providers or data centre operators may apply regulations for commercial use of data (typically CC 4.0 BY NC)

Service to the user community

National Impact

CzechGeo/EPOS

- is indispensable for any geoscience research on the territory of the Czech Republic
- used in numerous research papers
- used in applications
- frequently used in Master and PhD theses
- students are also involved in data acquisition and processing

Service to the user community

International overlap

- international cooperation in operation of several networks (PSLNET, PPGNet – Greece, Reykjanet – Iceland, TECNET – stations in 15 countries)
- participation in large international research projects (recently AlpArray)
- participation in EPOS (CzechGeo/EPOS was the first national consortium among EPOS countries established in 2010)
- contributing to global and regional data centres
- used in numerous research papers

Service to the user community

World or regional thematic data centres

- **Seismic data:** ORFEUS (Observatories and Research Facilities for European Seismology) <http://www.orfeus-eu.org/>, EMSC (The European-Mediterranean Seismological Centre) <http://www.emsc-csem.org>, Geofon <http://geofon.gfz-potsdam.de>, IRIS <http://ds.iris.edu/ds/>, International Seismological Centre <http://www.isc.ac.uk/>, NOAA Earth Information System <https://www.esrl.noaa.gov/neis/>
- **Data from GNSS stations:** EPN (EUREF Permanent Network) <http://epncb.oma.be>) and IGS (International GNSS Service <http://www.igs.org>). Freely accessible at <http://epncb.oma.be/ftp/center/data/BKGE.RDC> or at <ftp://igs.esgn.ign.fr>.
- **Gravimetric data:** IGETS (International Geodynamics and Earth Tide Service) <http://igets.u-strasbg.fr>)
- **Geomagnetic data:** INTERMAGNET (International Real-time Magnetic Observatory Network) <http://www.intermagnet.org/index-eng.php>, World Data Centre for Geomagnetism <http://www.wdc.bgs.ac.uk/>

Service to the user community

Societal impact (examples)

- data from seismology monitoring are closely linked to seismic hazard at nuclear power plants and nuclear waste repositories
- SLOPENET network contribute to the security of infrastructures in the areas exposed to slope deformation
- CZET monitors slope stability around deep open pit mine
- WEBNET is cooperating with the company responsible for safety of water dams and reservoirs as well as with local authorities in case of intensive seismic swarms.
- seismic records of station VRAC are provided to IDC CTBTO in Vienna as a part of the international monitoring of nuclear tests

Thank you